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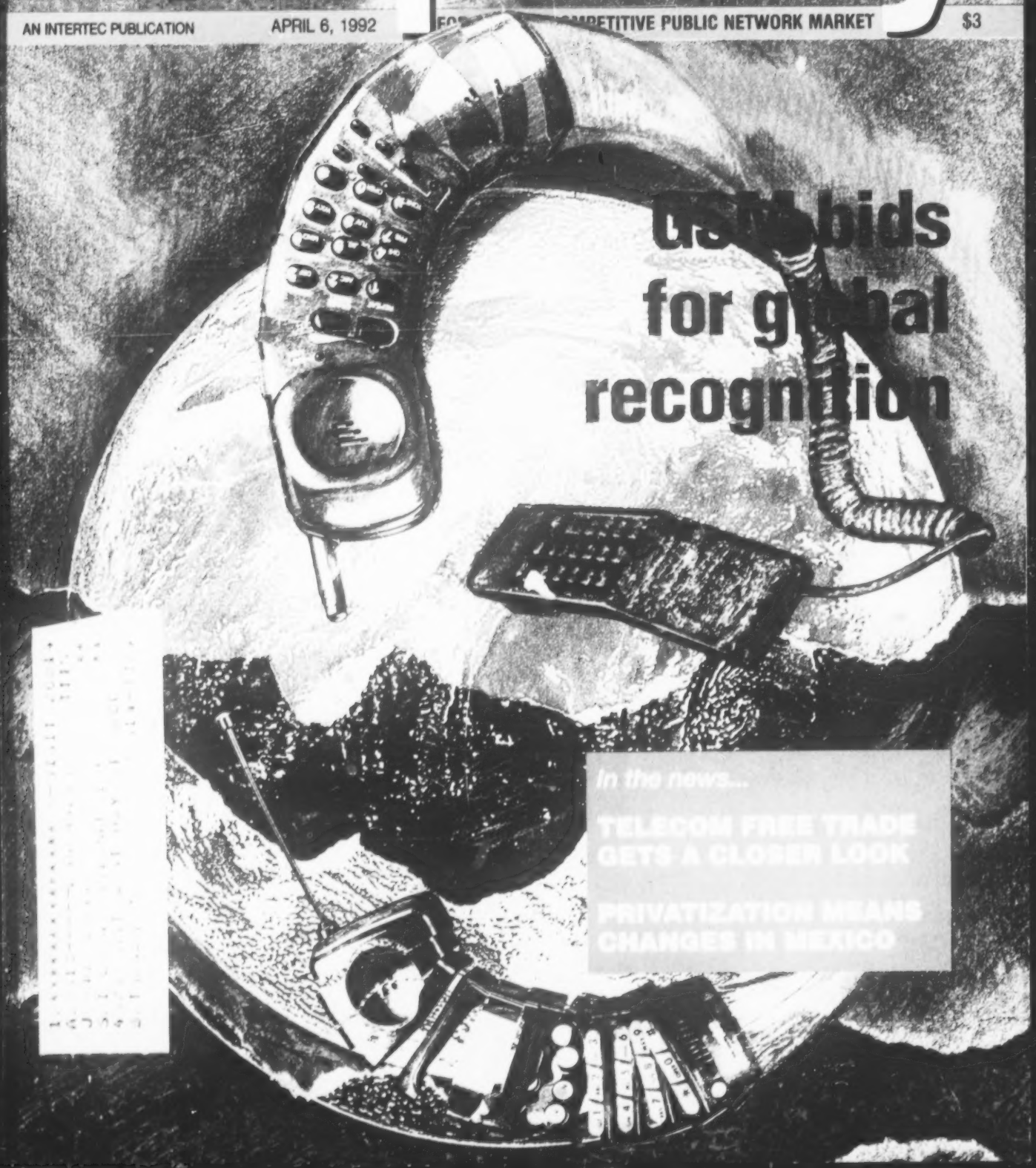

US bids for global recognition

In the news...

TELECOM FREE TRADE GETS A CLOSER LOOK

PRIVATIZATION MEANS CHANGES IN MEXICO

MONDAY, APRIL 6, 1992 Volume 222, No. 14

Telephony

FOR TODAY'S COMPETITIVE PUBLIC NETWORK MARKET

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By John Williamson. In a crowded cellular world, GSM may be the closest digital cellular standard to hitting the commercial market, despite its delays in getting there. Even so, that doesn't necessarily mean the European standard will dominate the globe and choke out the other two major cellular options
Cover illustration by Laura M. Doyle

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Telecommunications deregulation in Brazil rings up sales for U.S. firms

ANNE C. DIBBLE

Brazil's telecommunications market is once again open for business. After decades of protecting domestic telecommunications companies against international competition, Brazil is now rolling out the red carpet for foreign firms that want to help upgrade the country's antiquated telephone network. It is good news for American companies, which have long recognized Brazil's market potential as the world's 10th largest economy and 15th largest telecom network.

Brazilian President Fernando Collor is attracting new investment through an ambitious deregulation program aimed at injecting competition into key segments of the services and equipment markets. Plans are also under way to privatize the 58% government-owned state telecom holding company, Telebras, pending congressional approval of a constitutional amendment that would permit private ownership of public utilities.

A Deregulation Showcase

With 9 million lines installed in 1991, Brazil's public network is the largest in Latin America. Its telex network, linking 129,000 terminals, is the world's fifth largest.

Telebras is the jewel of Brazil's 200 state enterprises and by far its most lucrative. The privatization of Telebras and telecom liberalization are viewed by the Collor administration as spurs to network modernization and a means to fuel growth after more than a decade of stagnation and hyperinflation.

President Collor created the National Communications Secretariat (SECOM) to oversee the liberalization process, streamline the country's 28 local telcos into seven regional organizations, and implement a more realistic tariff structure through a three-year rate rebalancing plan.

Under Collor's predecessor, only the data communications sector had been partially deregulated in 1988, when local telcos were allowed to offer data services to compete with Embratel, the company responsible for long-distance and international voice, data, telex and maritime services.

Since Collor took office in March 1990, SECOM has sanctioned almost a dozen directives to foster competition in "limited" services not defined as part of the public network. The most important directive, approved last July, opened the cellular telephony, paging, private data communications and satellite markets. Private companies were also authorized to bid on the construction and installation of telephone networks, ranging from subscriber-financed projects to fiber optic systems.

Once constructed, these networks will continue to be managed by public phone operators, which also retained the right to explore limited services in competition with private companies. Value-added networks, now approved by the Special Secretariat for Informatics on a case-by-case basis, are expected to be liberalized soon.

U.S. officials are understandably delighted with the change in Brazil's policy. Ambassador Bradley Holmes, director of the State Department's Bureau of International Communications and Information Policy, predicts that the measures will provide new opportunities in Brazil's $3.2-billion telecom market for U.S. companies and joint ventures between companies in Brazil and the U.S.

To ensure that the deregulation process proceeds smoothly, Collor's economic team has been receiving technical assistance since last July from the Bush adminis-

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TABLE 1 PENETRATION RATES FOR SELECTED LATIN AMERICAN COUNTRIES, 1989

Country	Line penetration (per 100 inhabitants)
Argentina	9.5
Brazil	**6.7**
Chile	8.3
Mexico	10.0
Uruguay	14.1
Venezuela	11.4

Source: Organization of American States; Brazilian National Communications Secretariat

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tration and U.S. telecom firms. Ironically, many of these firms were forced to leave Brazil in the 1970s when foreign companies were banned from manufacturing or importing electronic equipment. Foreign companies that remained in Brazil such as NEC, Ericsson and Siemens transferred sensitive technology and managerial control to local partners in exchange for a guaranteed lock on government procurement of higher-end switching equipment. The lower end of this $1-billion market was reserved for local manufacturers.

"The highly protectionist model of the last 20 years has truly exhausted its effectiveness," Brazilian Communications Secretary Joel Rauber declared during a July 1991 conference in Washington, D.C., sponsored by the U.S. State Department as the first of regular bilateral discussions on technology, policy, regulation and trade in communications. More than 60 U.S. high-tech companies, including giants like the Bell regional holding companies, AT&T, Motorola, Hughes and IBM, were present at the conference to assess investment and joint venture opportunities.

The Bush and Collor administrations are making telecommunications in bilateral economic relations a high priority because the sector offers the most short-term growth in new money investment.

Brazil's network, which compared favorably to European networks in the 1970s, has suffered as a result of chronic underinvestment since the early 1980s. Today, Brazil's phone penetration rate of 6.7 per 100 inhabitants is among the lowest in Latin America (Table 1). Telebras officials estimate that $6 billion in new investments is needed to meet demand, now estimated at 6.5 million new lines.

According to U.S. Department of Commerce analyst Patricia Cooper, real demand is considerably higher, evidenced by a bustling black market for phone lines in Brazil's major metropolitan areas. In Rio de Janeiro alone, more than 2000 phones are sold monthly on the underground market by speculators at premium prices. For the 600,000 subscribers who have already paid the official rate of $3000 for a phone line, installation can take up to two years in densely populated cities.

Consumer frustration has been further exacerbated by declining network quality and rising rates. In 1990, only 76% of long-distance calls were completed on the first attempt, down from 94% in 1980. In exchange for poor service, Brazilians now pay some of the highest tariffs in the world. International calls averaged $2.90 per minute in 1991, and domestic long-distance charges were recently hiked 100% to keep up with the double-digit monthly inflation.

Brazil's self-imposed technological isolation over the past 20 years has also slowed network modernization. As of 1990, only 7% of the public network had been upgraded to digital technology. To counteract this situation, the government plans to digitize 80% of the public network by the year 2000 and should complete a pilot integrated services digital network program by the end of this year.

Despite these goals, the unavailability of advanced services, combined with deteriorating network quality and high rates, has clearly hurt Brazil's competitiveness as a foreign investment site. At a June 1991 conference, Brazilian officials admitted that poor telecommunications played a major role in General Motors' decision to transfer its Latin American headquarters from Sao Paulo to Miami.

But General Motors may have moved too soon, if industry response to the deregulation program is any indication. Communications equipment sales topped $2 billion for the first time in 1991, and orders are poised to grow by 40% in 1992.

Telecom services also are expanding briskly, fueled by triple-digit growth in international phone traffic—111% in 1990 alone—as companies begin to take advantage of the new deregulated environment for private data communications services and international value-added networks. Based on these trends, Brazilian telecom executives estimate that between $5 billion and $6 billion in new systems investment is needed over the next five years to meet demand for new services that could generate annual billings of $20 billion by the year 2000.

TABLE 2 U. S. PARTICIPATION IN BRAZILIAN CELLULAR CONSORTIA

1. **Motorola**, Unibanco, Equitel, Construtora Norberto Odebrecht
2. **AT&T, Ameritech**, Sid Telecomunicacoes, Construtora OAS
3. **BellSouth**, Banco Arbi, Grupo RBS, NTT, Banco Safra, Banco Iochpe
4. **Bell Atlantic**, Organizacoes Globo, Camargo Correa, NEC, Bradesco, Stet, Monteiro Aranha (Ericsson)
5. **GTE**, Andrade Gutierrez, Banco Icatu

Investment Opportunities

U.S. firms are being courted by the Brazilian government precisely because they have the enormous amounts of capital and sophisticated technology Brazil needs. According to Salomao Wajnberg, SECOM's director of industrial and technology policy, U.S. investment is also being encouraged to promote greater equilibrium in the imported equipment market, which is currently dominated by the Brazilian subsidiaries of NEC,

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Ericsson and Siemens. Imports now account for 30% of Brazil's $3.2-billion equipment market, with the remainder supplied by approximately 150 local manufacturers, 17 of which are affiliated with multinationals.

U.S. firms are being enticed into Brazil by the possibility of owning up to 49% of non-voting stock in Brazilian telecom and computer companies, as decreed in a new informatics law that will take effect in October. But preference will still be given to Brazilian companies in government equipment procurement bids particularly in the switching equipment market, where Brazil now deploys an indigenous switching system, TROPICO, that was developed with Canada's Northern Telecom.

According to SECOM's Wajnberg, local manufacturers will no longer be automatically favored in government procurement policies and will have to compete with foreign manufacturers for contract bids on the basis of quality, price and delivery terms—even in the protected switching market. As evidence of this change, Wajnberg cited Embratel's May 1991 decision to award a $20-million international switching system contract to a consortium led by AT&T.

The best opportunities in Brazil's equipment market await U.S. firms in areas where American technology and expertise remain strong—such as the satellite, fiber optic, trunking, paging, cellular, value-added and data communications equipment sectors. In the paging market, for example, giant Motorola and the smaller Skytel have both linked up with local partners to win paging licenses in major Brazilian cities.

U.S. firms can also bid on network construction and installation projects. Although American companies must team with local firms to participate, there are no equipment import restrictions. Cooper, of the U.S. Department of Commerce, says Brazil's cash-strapped local telcos are supporting private network construction to reduce the nation's 1 million backlog of subscribers without phones.

Telcos have already ordered 500,000 new lines under the low-budget, subscriber-financed condominium construction program, 66% of which will be fiber. If the initial phase of the program is successful, the government will rely exclusively on private contracts to meet its national target of 25 million lines installed by the year 2000.

To speed deployment of fiber optic networks, Embratel is tendering bids for cable projects to link major Brazilian cities and transmit enhanced ISDN services. Although Brazil currently protects its two domestic fiber optic manufacturers with a steep 50% tariff, the government will purchase imported fiber when domestic quality or quantity is lacking. AT&T is banking on that loophole to beat out the Brazilian subsidiaries of Ericsson, NEC and Siemens in a bid to construct a $40-million fiber optic cable between Rio de Janeiro and Sao Paulo that will provide advanced 800, automated telecard and other ISDN services beginning in 1993.

U.S. firms are being enticed into Brazil by the possibility of owning up to 49% of non-voting stock in Brazilian telecom and computer companies....

Embratel is also planning to connect Belo Horizonte, Rio de Janeiro, Sao Paulo and Brasilia with fiber optics, and lay southern and northeastern cable to cover the rest of the country. To complement the country's internal fiber network and increase capacity for U.S.-Brazil telecommunications traffic, Embratel is investing $140 million in a new undersea cable stretching from Brazil's Atlantic coast to AT&T's TCS-1 cable in the Caribbean. Although the deal was signed between Embratel and AT&T, MCI and Sprint will also participate, together with telcos from Canada, Latin America, Europe and the Far East.

Brazil's cellular market has been the most hotly disputed among U.S. firms and their international competitors, all of which are anxious for a piece of that estimated $4.5-billion market. NEC do Brasil and Northern Telecom were the big winners of tenders issued by SECOM in 1990 to install private cellular networks in Rio de Janeiro and Brasilia in conjunction with domestic companies and local operators. Some 4000 subscribers have signed up in Rio at an initial cost of $6000 to $8000 per line, and local telco officials are projecting that there will be 10,000 subscribers by 1994. Prices per new line now hover around $3500 and are dropping fast as demand increases.

Five other cellular networks are expected to go on-line between now and 1993 in Sao Paulo, Curitiba, Porto Alegre, Belo Horizonte and Salvador. Based on surveys done by Telebras in these and other cities, national demand for cellular service could reach 500,000 terminals over the next few years, and could eventually replace regular service in sparsely populated areas. Some 300,000 of these subscribers are located in greater metropolitan Sao Paulo, responsible for 60% of all telephone traffic and 70% of all data traffic in Brazil. Little wonder that Brazilian Infrastructure Minister Joao Santana has called Sao Paulo "the last great potential cellular market" in the world.

American companies clearly agree with Santana's assessment. AT&T, Motorola, GTE, Bell Atlantic, Ameritech and BellSouth have all joined forces with powerful Brazilian financial, communications and construction groups to dispute the right to initially install 25,000 lines in Sao Paulo (Table 2). With a potential subscriber base of 100,000 customers, analysts estimate that Sao Paulo could generate $1 billion in equipment and line sales alone. In Brazil's southern region, AT&T, Motorola and BellSouth are squaring off against foreign powerhouses like NEC, Ericsson and Northern Telecom for the right to construct cellular systems in Curitiba and Porto Alegre.

Brazil's booming data communications market is also attracting U.S. corporations. Most data transmission in Brazil is now handled by Embratel in conjunction with Sprint International, al-

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though Embratel recently joined AT&T to provide dedicated line service between the U.S. and Brazil at a monthly cost per line of between $9000 and $15,000. Facsimile service is controlled by Embratel through Telebras, which has installed 5000 locally manufactured machines since 1985. Demand for fax machines is so high, however, that the U.S. Embassy in Brasilia estimates that 10,000 contraband fax machines have been brought in from abroad.

The market for data communications services has been growing by roughly 25% annually since the mid-1980s, helping to boost the percentage of revenues Embratel earns from these services from 10% in 1985 to 30% today. In 1991, Embratel invested $575 million to expand and digitize its Transdata, Transdata Plus, Renpac, Datasat and Digisat data and packet-switching networks. Despite these outlays, Embratel faces an estimated backlog of 11,000 customers for its data communications services that company officials estimate could generate an additional $15 million in monthly revenues.

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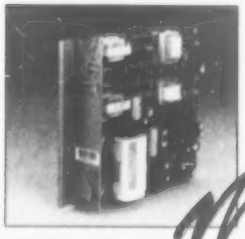

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At an international data communications conference held in Sao Paulo last April, Embratel President Carlos de Paiva Lopes called on the private sector to help his company meet pent-up demand for data services by constructing private data networks and access points to the public network. He also suggested that private firms bring in new services and technologies, and form joint ventures with public operators to explore those services.

As an example of this, Telesp, the local telco in Sao Paulo, is helping IBM's Brazilian subsidiary sell additional capacity on its new $1.2-million private data network to other firms. A Brazilian company, CMA, uses Embratel's long-distance network to operate the largest private data bank in Latin America, linking more than 4000 terminals.

Private companies like CMA can lease lines for data transmission through Embratel and local telcos, and firms that are 51% Brazilian-owned can build and operate their own private communications satellites. Smaller firms will be able to tap into private data lines available on Brasilsat BI and BII, the next generation of Brazilian communication satellites. The $400-million satellites are being built by Hughes, and will be used primarily for data transmission and to relieve high-traffic voice circuits when launched in 1994.

Other U.S. corporations vying for Brazil's private data and satellite markets include GTE Spacenet and AT&T, which provide Embratel with key technologies for its Datasat Bi network, which serves 70 small and medium-sized companies. The government is also tendering bids for a privately owned, low-orbiting satellite that will transmit voice and data nationally via narrow-band radio.

Telebras—Another Telmex?

AT&T, Hughes and IBM are not the only companies looking at Brazil's newly deregulated telecom industry for investment opportunities. The sector has caught the eye of powerful institutional investment firms like Goldman Sachs and Salomon Brothers, so much so that Salomon advised its clients in November 1991 that Telebras' stock represents the best telecom investment worldwide. Speculation about the possible privatization of Telebras fueled a 6000% jump in its stock price over 1991, well above Brazil's 432% inflation rate last year. Despite these gains, Telebras' stock currently sells for only 10% above its per-share asset value, while Mexico's Telmex stock sells for four times its per-share asset value.

Private investors are banking on the congressional approval of an amendment to the Brazilian constitution that would permit private companies to explore public utilities services. Although the amendment was scheduled for passage in 1993 as part of a larger revision of Brazil's 1988 constitution, the head of Brazil's National Bank for Economic and Social Development recently declared that the government would introduce a separate amendment this year to speed up the privatization process. That amendment is now being studied by the National Secretariat for Economic Policy and Brazil's Commission on Privatization. Telebras President Jose Ignacio Ferreira is confident that the amendment will be passed by the Brazilian Congress, in light of a poll showing that 55% of senators and congressmen already support the end of Telebras' telecom monopoly.

Telebras executives are busy smoothing the way for privatization. More than $300 million in Eurobonds were offered over the past 12 months to test investor receptivity to the eventual sale of $1.1 billion in American Depositary Receipts to international investors. With the proceeds, the government hopes to meet annual investment targets of $3 billion until the end of the decade.

At the corporate level, officials are restructuring Telebras to return it to its traditional role as a holding company rather than policy arbiter. Ferreira and his staff believe that Telebras' new role as a privatized holding company, together with private investment and deregulation, will be the answer to the problems that face Brazil's telecom system and will prepare the country for sustained growth in the 21st century. ■

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